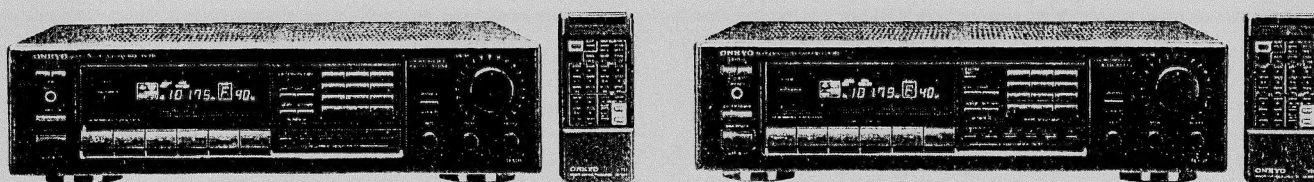


ONKYO SERVICE MANUAL

QUARTZ SYNTHESIZED TUNER AMPLIFIER MODEL TX-9011 MODEL TX-9021



Black and Silver models

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK Δ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

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ONKYO
AUDIO COMPONENTS

SPECIFICATIONS

AMPLIFIER SECTION

	TX-9021	TX-9011
Power Output:	60 watts per channel, min. RMS, at 8 ohms, both channels driven, from 40Hz to 20kHz, with no more than 0.2% THD.	45 watts per channel, min. RMS, at 8 ohms, both channels driven, from 40kHz to 20kHz, with no more than 0.3% THD.
Dynamic Power Output:	2 × 100 watts at 4 ohms 2 × 75 watts at 8 ohms	2 × 80 watts at 4 ohms 2 × 60 watts at 8 ohms
Continuous Power Output:	2 × 80 watts at 4 ohms, 1kHz (DIN) 2 × 65 watts at 8 ohms, 1kHz (DIN)	2 × 60 watts at 4 ohms, 1kHz (DIN) 2 × 50 watts at 8 ohms, 1kHz (DIN)
Total Harmonic Distortion:	0.2% at rated power 0.1% at 30 watt output	0.3% at rated power 0.1% at 30 watt output
IM Distortion:	0.2% at rated power 0.1% at 30 watt output	0.3% at rated power 0.1% at 30 watt output
Damping Factor:	50 at 8 ohms	50 at 8 ohms
Frequency Response:	20 — 30,000 Hz ± 1dB	20 — 30,000 Hz ± 1dB
RIAA Deviation:	20 — 20,000 Hz ± 0.8dB	20 — 20,000 Hz ± 0.8dB
Sensitivity and Impedance:	Phono: 2.5mV/50 kohms CD/Tape Play: 150mV/50 kohms Tape Rec: 150mV/3.5 kohms	Phono: 2.5mV/50 kohms CD/Tape Play: 150mV/50 kohms Tape Rec: 150mV/3.5 kohms
Phono Overload:	120mV RMS at 1kHz, 0.2% TDH	120mV RMS at 1kHz, 0.3% THD
Signal-to-Noise Ratio:	Phono: 80dB (at 5mV input, IHF-A) CD/Tape: 100dB (IHF-A)	Phono: 80dB (at 5mV input, IHF-A) CD/Tape: 100dB (IHF-A)
Tone Controls:	Bass: ± 10dB at 100Hz Treble: ± 10dB at 10kHz	Bass: ± 10dB at 100Hz Treble: ± 10dB at 10kHz
Muting:	— ∞	— ∞
LOUDNESS (—30dB):	+7dB at 70Hz, +5dB at 10kHz	+7dB at 70Hz, +5dB at 10kHz

TUNER SECTION

FM:	
Tuning Range:	87.50—108.00MHz (50kHz steps)
Usable Sensitivity:	Mono: 12.4dBf, 1.2μV, 75ohms 1.2μV (S/N 26dB, 40kHz Dev.) 75ohms DIN Stereo: 19.2dBf, 2.5μV, 75ohms 25μV (S/N 46dB, Dev.) 75ohms DIN
50dB Quieting Sensitivity:	Mono: 18.2dBf, 2.2μV, 75ohms Stereo: 38.2dBf, 22μV, 75ohms
Capture Ratio:	1.5dB
Image Rejection Ratio:	85dB
IF Rejection Ratio:	90dB
Signal-to-Noise Ratio:	Mono: 70dB Stereo: 65dB
Selectivity:	50dB DIN (±300kHz, 40kHz dev.)
AM suppression Ratio:	50dB
Harmonic Distortion:	Mono: 0.15% Stereo: 0.30%
Frequency Response:	30—15,000Hz±1.5dB
Stereo Separation:	40dB at 1kHz 30dB at 100—10,000Hz
Muting Level:	17.2dBf, 4μV
AM:	
Tuning Range:	522—1610kHz (9kHz steps) 522—1610kHz (9kHz steps) or 530—1710kHz (10kHz steps) (World wide model)
Usable Sensitivity:	30μV
Image Rejection Ratio:	40dB
IF Rejection Ratio:	40dB
Signal-to-Noise Ratio:	40dB
Harmonic Distortion:	0.8%

GENERAL

	TX-9021	TX-9011
Dimensions (W×H×D):	455×120×316mm 17-15/16" ×4-6/8" ×12-7/16"	455×120×316mm 17-15/16" ×4-6/8" ×12-7/16"
Weight:	8.0kg, 17.6 lbs.	7.2kg, 15.9 lbs.

Remote control transmitter RC-2235

Transmitter:	Infrared
Signal range:	Approx. 5 meters (16ft. × 4")
Power supply:	Two "AA" batteries (1.5V × 2)

Specifications and features are subject to change without notice.

SERVICE PROCEDURES

1.Replacing the fuses

For continued protection against fire hazard, replace only with same type and same rating fuse.

Circuit No.	Part No.	Description	Model
F902	252073	1.6A-SE-EAK, Primary	TX-9011
F902	252075	2.5A-SE-EAK, Primary	TX-9021
F951	252074	2A-SE-EAK, AC outlet	TX-9021

2.Changing the band step

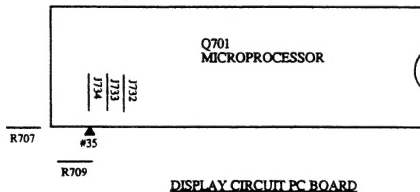
(FM)

BAND STEP	R707(10kΩ)	J734
200kHz→50kHz	Add	Cut
50kHz→200kHz		Shorted

(AM)

BAND STEP	R709(10kΩ)	J732
10kHz→9kHz		Shorted
9kHz→10kHz	Add	Cut

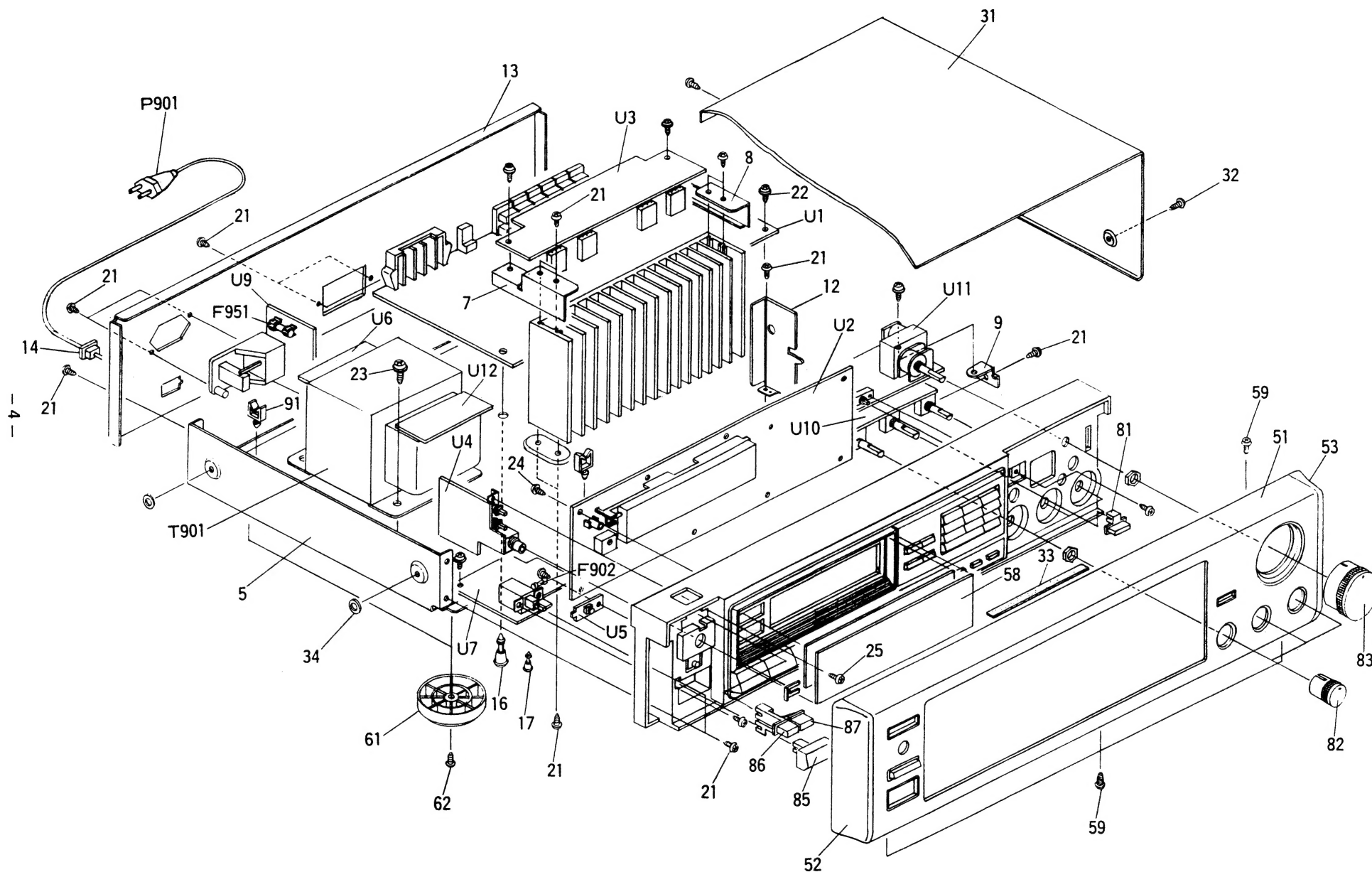
Refer to the page 21.



EXPLODED VIEW

MODEL TX-9021

TX-9021



PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
1	27110749Y	Front bracket ass'y
	27110750Y	Front bracket ass'y <S>
4	28133254Y	Back plate
5	27100228Y	Chassis
6	27160293Y	Radiator
7	27141441Y	Bracket LH
8	27141442Y	Bracket RH
9	27141443Y	Bracket PC
12	27130643AY	Bracket, shield
13	27121688Y	Rear panel
14	27300750	⚠ Bushing, cord
16	27190524	KGLS-14RT,Holder
17	27190266	KGLS-12RT,Holder
21	834430088	3TTS+8B(BC),Self-tapping screw
22	831130088	3TTW+8B,Self-tapping screw
23	830440089	4TTC+8C(BC),Self-tapping screw
24	833430080	3TTP+8P(BC),Self-tapping screw
25	82143006	3P+6FN(BC),Pan head screw
26	801433	3SMS10W.SW+14B(BC),Sems
		Self-tapping screw
31	28184471AY	Top cover
32	834430088	3TTS+8B(BC),Self-tapping screw
33	28140680	Cushion
34	27270212	Spacer <P/W/Q>
51	1A417701K	Front panel ass'y
	1A418701K	Front panel ass'y <S>
52	28125226BY	End cap L
53	28125227BY	End cap R
58	28191617Y	Clear plate
59	833430080	3TTP+8P(BC),Self-tapping screw
61	27175254	Leg
62	834430088	3TTS+8B(BC),Self-tapping screw
81	28324162Y	Knob, Loudness
	28324177Y	Knob, Loudness <S>
82	28324150-1A	Knob, Level
	28324151	Knob, Level <S>
83	28324163	Knob, Volume
	28324184	Knob, Volume <S>
85	28324140	Knob, Power
	28324184	Knob, Power <S>
86	28324170	Knob, Speaker A
	28324172	Knob, Speaker A <S>

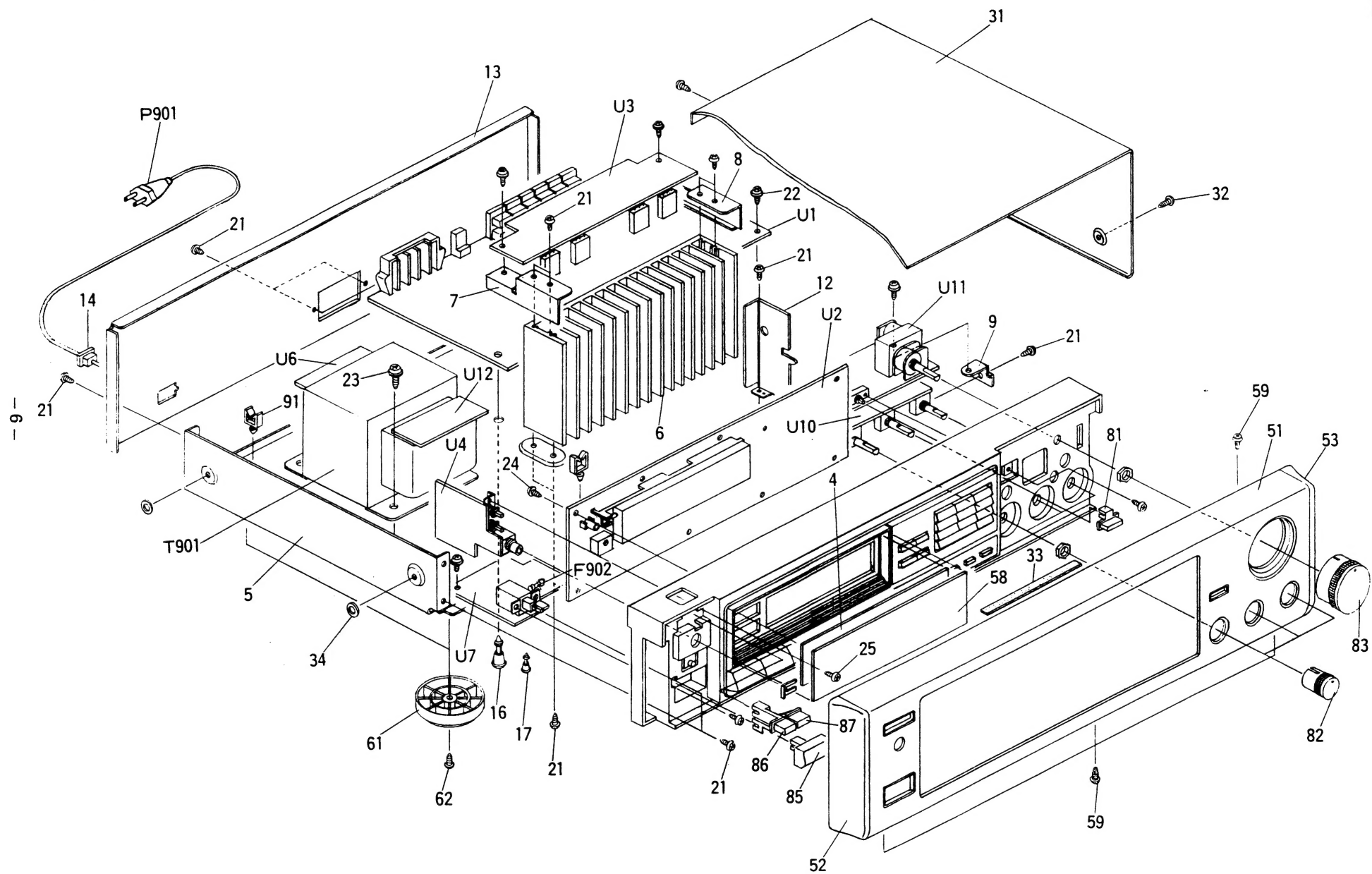
REF. NO.	PART NO.	DESCRIPTION
87	23824171	Knob, Speaker B
	23824173	Knob, Speaker B <S>
91	27300833	WS-2NS,Clamp
F902	252075	⚠ 2.5A-SE-EAK,Primary fuse
F951	252074	⚠ 2A-SE-EAK,Fuse
P901	253164Y or	⚠ AS-CEE,
	253175Y	⚠ Power supply cord
P902	25060044	Terminal GND
Q503,Q504	2202282,	2SA1265N-R,
	2202283,	2SA1265N-O,
	2201693,	2SA1491-O,
	2201694 or	2SA1491-Y or
	2201696	2SA1491-P,Power transistors
Q505,Q506	2202292,	2SC3182N-R,
	2202293,	2SC3182N-O,
	2201703,	2SC3855-O,
	2201704 or	2SC3855-Y or
	2201706	2SC3855-P,Power transistors
T901	2300754Y	⚠ NPT-1129P,Power transformer
U1	1A415525-3A	NARF-4325-3A,Tuner circuit
		pc board ass'y
U2	1A415526-3A	NADIS-4326-3A,Display circuit
		pc board ass'y
U3	1A415527-3A	NAAF-4327-3A,Power amplifier circuit
		pc board ass'y
U4	1A415528-3A	NASW-4328-3A,Headphone terminal
U5	1A415529-3	NASW-4329-3,Power switch
		pc board ass'y
U6	1A415530-3	NAETC-4330-3,Terminal pc board
U7	1A415531-3A	NAPS-4331-3A,Power supply circuit
		pc board ass'y
U9	1A415533-3	NAETC-4333-3,Outlet terminal
		pc board ass'y
U10	1A415534-3A	NAAF-4334-3A,Tone control circuit
		pc board ass'y
U11	1A415535-3	NAETC-4335-3,Volume control circuit
		pc board ass'y
U12	1A415537-3	NAETC-4337-3,Terminal pc board ass'y

NOTE: :Black model only
<S>:Silver model only

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

EXPLODED VIEW

MODEL TX-7900



PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
1	27110763Y	Front bracket ass'y
	27110764Y	Front bracket ass'y <S>
4	28133254Y	Back plate
5	27100228Y	Chassis
6	27160272AY or	Radiator
	27160290Y	Radiator
7	27141441Y	Bracket LH
8	27141442Y	Bracket RH
9	27141443Y	Bracket PC
12	27130643AY	Bracket, shield
13	27121693Y	Rear panel
14	27300750	⚠ Bushing, cord
16	27190524	KGLS-14RT,Holder
17	27190266	KGLS-12RT,Holder
21	834430088	3TTS+8B(BC),Self-tapping screw
22	831130088	3TTW+8B,Self-tapping screw
23	830440089	4TTC+8C(BC),Self-tapping screw
24	833430080	3TTP+8P(BC),Self-tapping screw
25	82143006	3P+6FN(BC),Pan head screw
26	801433	3SMS10W.SW+14B(BC), Self-tapping screw
31	28184471AY	Top cover
32	834430088	3TTS+8B(BC),Self-tapping screw
33	28140680	Cushion
34	27270212	Spacer
51	1A421701K	Front panel ass'y
	1A422701K	Front panel ass'y <S>
52	28125226BY	End cap L
53	28125227BY	End cap R
58	28191617Y	Clear plate
59	833430080	3TTP+8P(BC),Self-tapping screw
61	27175254	Leg
62	834430088	3TTS+8B(BC),Self-tapping screw
81	28324162Y	Knob, Loudness
	28324177Y	Knob, Loudness <S>
82	28324150-1	Knob, Level
	28324151A	Knob, Level <S>
83	28324163	Knob, Volume
	28324182	Knob, Volume <S>
85	28324140	Knob,Power
	28324184	Knob,Power <S>

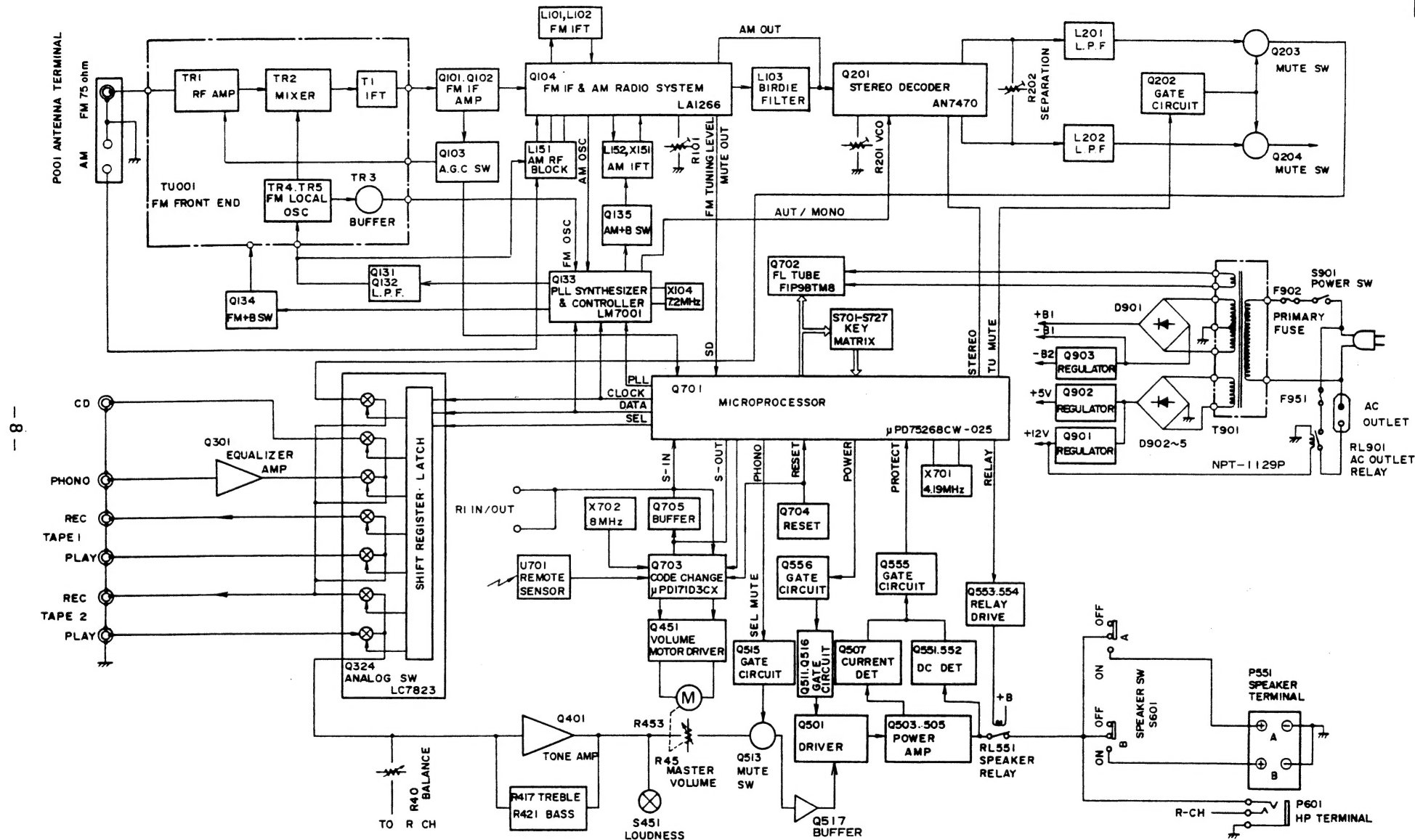
REF.NO.	PART NO.	DESCRIPTION
86	28324170	Knob, Speaker A
	28324172	Knob, Speaker A <S>
87	23824171	Knob, Speaker B
	23824173	Knob, Speaker B <S>
91	27300833	WS-2NS,Clamp
P902	252073	⚠ 1.6A-SE-EAK,Primary fuse
P901	253164Y or	⚠ AS-CEE,
	253175Y	⚠ Power supply cord
P902	25060044	Terminal GND
Q503,Q504	2202492	2SA1264N-R,
	2202493	2SA1264N-O,
	2202243	2SA1694-O,
	2202244	2SA1694-Y or
	2202246	2SA1694-P,Power amplifier transistor
Q505,Q506	2202502	2SC3812N-R,
	2202503	2SC3812N-O,
	2202253	2SC4467-O,
	2202254	2SC4467-Y or
	2202256	2SC4467-P,Power amplifier transistor
T901	2300758Y	⚠ NPT-1130P,Power transformer
U1	1A419525-4A	NARF-4325-4A,Tuner circuit pc board ass'y
U2	1A419526-4A	NADIS-4326-4A,Display circuit pc board ass'y
U3	1A419527-4A	NAAF-4327-4A,Power amplifier circuit pc board ass'y
U4	1A419528-4A	NASW-4328-4A,Headphone terminal pc board ass'y
U5	1A419529-4	NASW-4329-4,Power switch pc board ass'y
U7	1A419531-4A	NAPS-4331-4A,Power supply circuit pc board ass'y
U10	1A419534-4A	NAAF-4334-4A,Tone control circuit pc board ass'y
U11	1A419535-4	NAETC-4335-4,Volume control pc board ass'y

NOTE: :Black model only
<S>:Silver model only

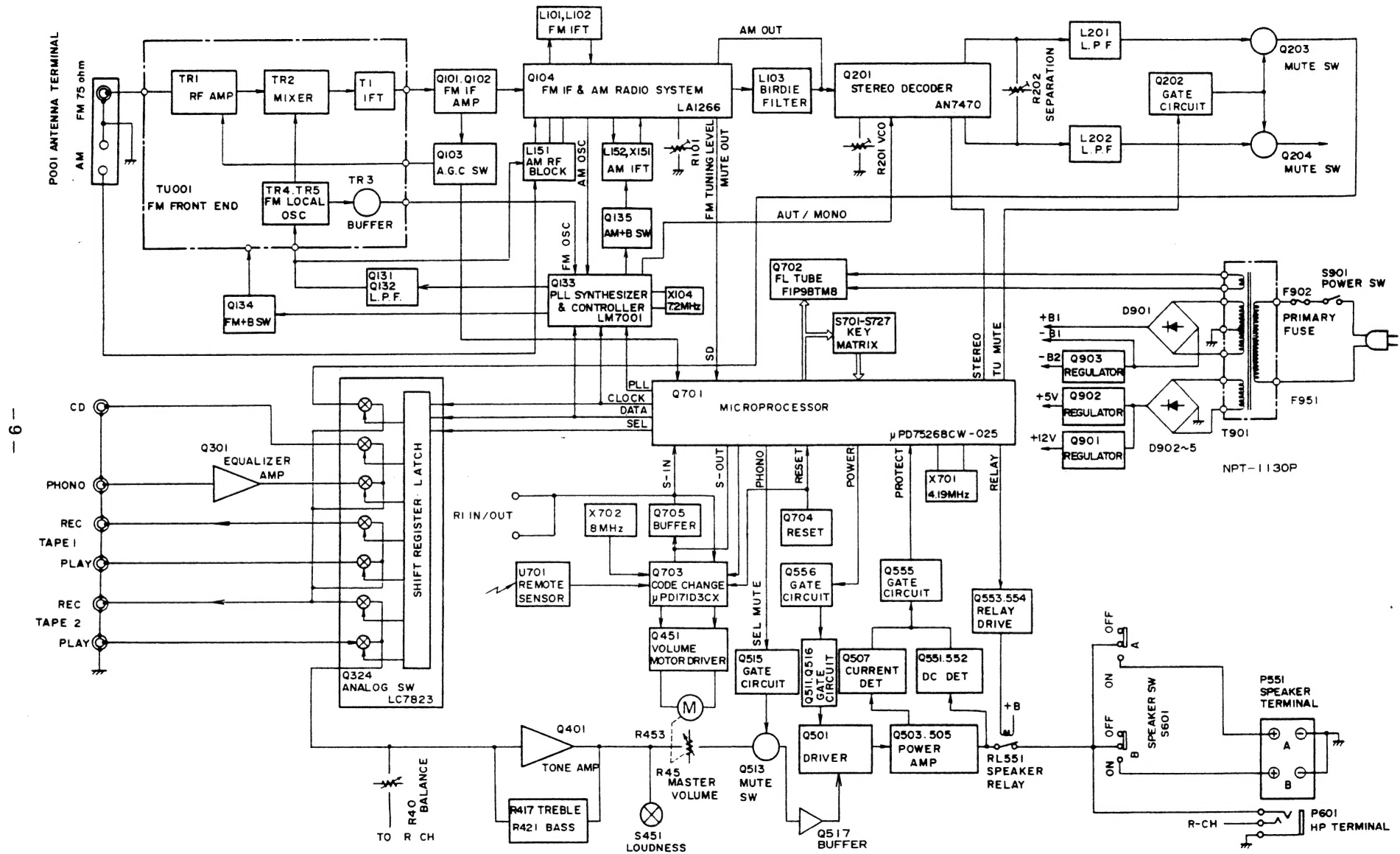
NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠
ARE CRITICAL FOR RISK OF FIRE AND
ELECTRIC SHOCK. REPLACE ONLY WITH
PART NUMBER SPECIFIED.

BLOCK DIAGRAM

MODEL TX-9021

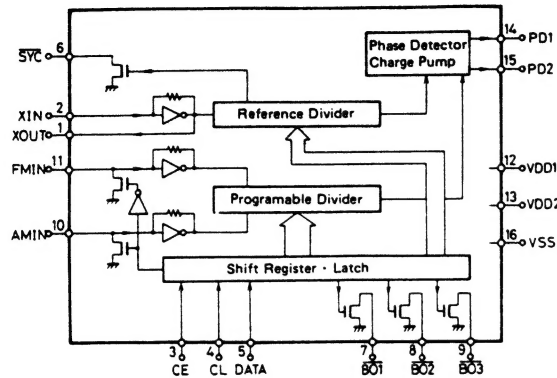


MODEL TX-9011



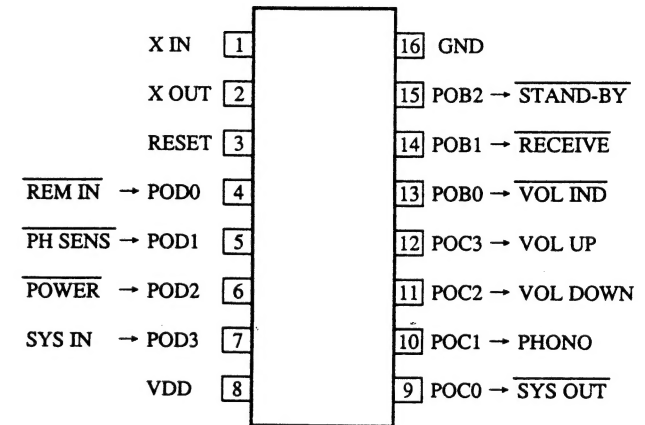
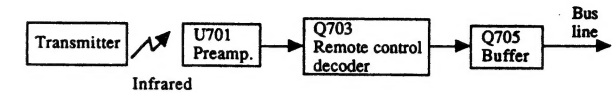
IC BLOCK DIAGRAM AND DESCRIPTION

LM7001(PLL synthesizer and controller)



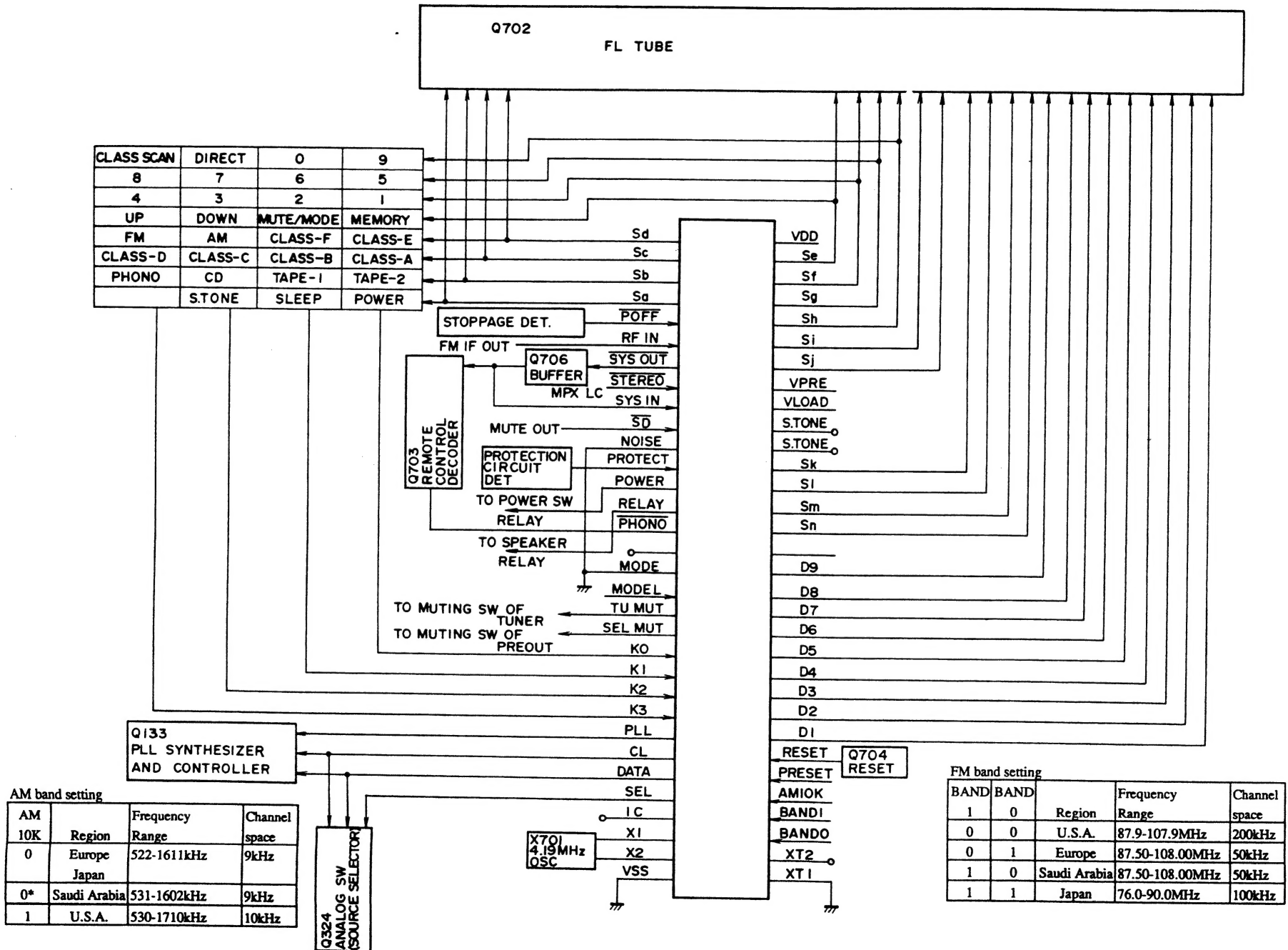
Pin No.	Terminal	Description
1	XOUT	Connect to the 7.2 MHz crystal oscillator.
2	XIN	
3	CE	Chip enable terminal. Connect to the PLL terminal of micro processor.
4	CL	Serial clock input terminal. Connect to the CLOCK terminal of micro processor.
5	DATA	Serial data input terminal. Connect to the DATA terminal of micro processor.
6	SYN	Not used.
7	AUTO/MONO	Auto/Mono control output terminal. "H" when Auto.
8	BO2	FM control signal output terminal. "L" when FM.
9	BO3	AM control signal output terminal. "L" when AM.
10	AMIN	AM local oscillator input terminal.
11	FMIN	FM local oscillator terminal.
12	VDD1	Power supply terminal for back-up.
13	VDD2	Power supply terminal.
14	PD1	Charge pump output of the phase detector which constitutes the PLL. High level is output when the divided local oscillator frequency is high than the reference frequency.
15	PD2	In the opposite case, low level is output. Floating occurs when the frequencies matched. The output is applied to the variable capacitor diode in the local oscillator through the low pass filters.
16	Vss	Ground terminal.

μPD17103CX-528(Remote control decoder)



Pin No.	Symbol	Terminal	Description
1	XIN	OSC	Connect to the 8.00MHz ceramic oscillator.
2	XOUT		
3	RES	RESET	System reset terminal. Active low.
4	POD0	REMOTE IN	Signal input terminal from preamp. for remote control. Active low.
5	POD1	PHONO SENSE	Phono detection input terminal. Active low.
6	POD2	POWER	Stand-by detection input terminal. During low input, only the POWER code is decoded.
7	POD3	SYS IN	System code input terminal.
8	V _{DD}	+B	Power supply terminal.
9	POC0	SYS OUT	Output at this terminal are the custom code (16bits) remote control code input to REMOTE IN, data code (8bits), and the serial code (12bits) that has been converted corresponding to the decoded data code (8bits)
10	POC1	PHONO	When the player PLAY/REJECT is input, a high pulse of 200ms is output.
11	POC2	VOL DOWN	When the volume DOWN code is input, a high pulse of 120ms is output.
12	POC3	VOL UP	When the volume UP code is input, a high pulse of 120ms is output.
13	POB0	VOL IND	During the output of VOLUME UP/DOWN, a pulse ($\overline{\text{L}}\text{H}\text{L}\text{H}\text{L}\text{H}$ = 250ms) is output. (Not used.)
14	POB1	RECEIVE	This is the display output for remote control reception. Output is low when decoded code is being recieved.
15	POB2	STAND-BY	STAND-BY indication terminal.
16	V _{SS}	GND	Ground terminal.

μPD75268CW-025(Microprocessor)

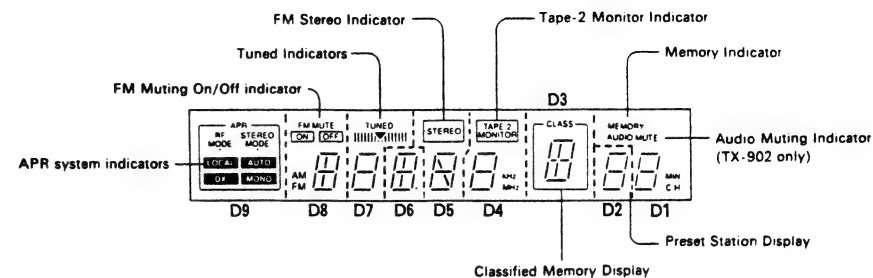
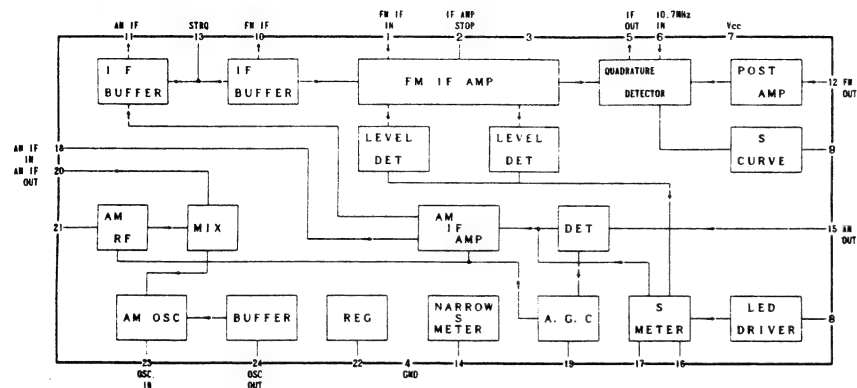


TERMINAL DESCRIPTION

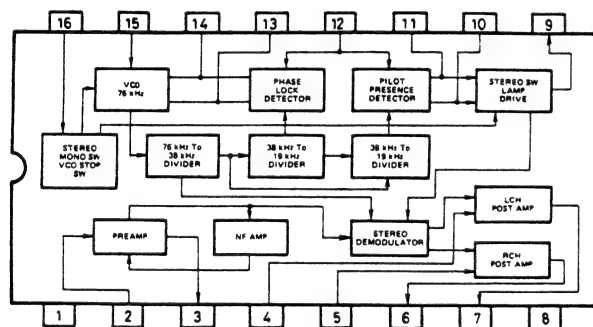
Pin No.	Symbol	Description						
1	Sd	Segment and key scan output terminals. "H" when active.						
2	Sc							
3	Sb							
4	Sa							
5	POFF	This is the input terminal for detection of the stoppage of electric current."L" when the stoppage of electric current.						
6	RF IN	RF mode input terminal. <table><tr><td>RF IN</td><td>RF MODE</td></tr><tr><td>L</td><td>LOCAL</td></tr><tr><td>H</td><td>DX</td></tr></table>	RF IN	RF MODE	L	LOCAL	H	DX
RF IN	RF MODE							
L	LOCAL							
H	DX							
7	SYS OUT/ SYS EN	System code output terminal."L"when active. Initializing input terminal when the power turns on.						
8	STEREO	Stereo broadcast detection input terminal. "L" when stereo broadcast.						
9	SYS IN	System code input terminal."H" when active.						
10	SD	Broadcast detection input terminal."L" when active. Control the stop of auto tuning and output TU MUT(#19).						
11	NOISE	Noise detection input terminal.Not used.						
12	PROTECT	Protection circuit operation detection input terminal.						
13	POWER	Power control output terminal.						
14	RELAY	Speaker relay control output terminal.						
15	PHONO	Phono control output terminal.						
16		Not used.						
17	MODE	Initializing input terminal for operation mode setting.						
18	MODEL	Initializing input terminal for model setting of receiver.						
19	TU MUT	Muting output terminal."H" when active.						
20	SEL MUT	Audio muting output terminal.Not used.						
21	K0	Key scan input terminals. "H" when active.						
22	K1							
23	K2							
24	K3							
25	PLL	Connect to the terminal CE of PLL IC (LM7001 Q133).						
26	CL	Connect to the terminal CL of PLL IC and analogue switch.						
27	DATA	Connect to the terminals DATA of PLL IC and analogue switch.						
28	SEL	Analog switch control output terminal. Connect to the terminal SEL of analogue switch(LC7823 Q324)						

Pin No.	Function	Description
29	IC	Internal connected.
30	X1	Ceramic oscillator connection terminal for main system clock.
31	X2	Connect to the 4.19MHz ceramic oscillator.
32	VSS	Ground terminal.
33	XT1	Ceramic oscillator connection terminal for sub system clock.
34	XT2	Not used.
35	BAND0	Initializing input terminal for region setting of FM band.
36	BAND1	
37	AM 10K	Initializing input terminal for region setting of AM band.
38	PRESET	Initializing input terminal for operation mode setting.
39	RESET	Reset input terminal."L"when active.
40	D1	Digit output terminals."H" when active.
41	D2	
42	D3	
43	D4	
44	D5	
45	D6	
46	D7	
47	D8	
48	D9	
49		Not used.
50	Sn	Segment output terminals."H" when active.
51	Sm	
52	Sl	
53	Sk	
54	S.TONE	SELECTIVE TONE indication output terminal.Not used.
55	S.TONE	SELECTIVE TONE control output terminal.Not used.
56	VLOAD	Pull-down resistor connection terminal of FIP controller/driver.
57	VPRE	Power supply terminal of output buffer of FIP controller/driver.
58	Sj	Segment and key scan output terminals. "H" when active.
59	Si	
60	Sh	
61	Sg	
62	Sf	
63	Se	
64	VDD	Power supply terminal.(+5V)

FIP9BTM8(Fluorescent tube)

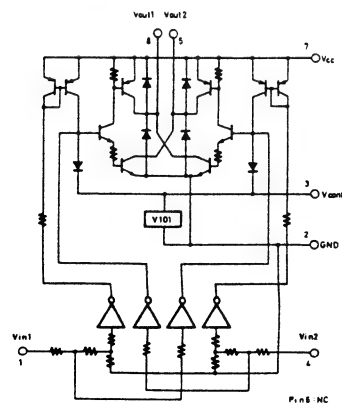


Terminal No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Electrode	F	F	NP	9G	NP	NP	NP	NP	NP	9G	NP	8G	NP	NP	8G	P(n)
Terminal No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Note
Electrode	7G	7G	P(m)	6G	6G	P(l)	P(k)	5G	P(j)	P(i)	4G	P(h)	NP	4G	P(g)	
Terminal No.	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	
Electrode	3G	P(f)	P(e)	3G	P(a)	2G	2G	P(b)	1G	P(c)	P(d)	1G	NP	F	F	



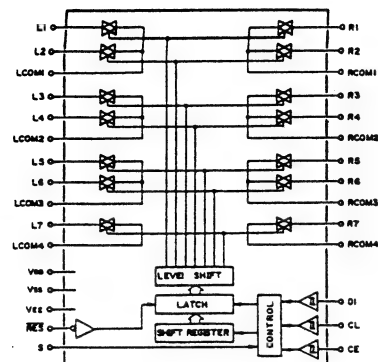
Note: F:Filament
G:Grid
P:Anode
NP:No pin

	D9	D8	D7	D6	D5	D4	D3	D2	D1
Sa	APR	a	a	a	a	a	a	a	a
Sb	STEREO MODE	b	b	b	b	b	b	b	b
Sc	AUTO	c	c	c	c	c	c	c	c
Sd	MONO	d	d	d	d	d	d	d	d
Se	DX	e	e	e	e	e	e	e	e
Sf	LOCAL	f	f	f	f	f	f	f	f
Sg	RF MODE	g	g	g	g	g	g	g	g
Sh					h				
Si		i		i			i		
Sj		FM MUTE	TUNED		STEREO	TAPE-2	CLASS		MEMORY
Sk		ON	▼ (TUNED)				k		SLEEP
Sl		OFF							AUDIO MUTE
Sm		AM				kHz			MIN
Sn		FM				MHz			CH



IN 1	IN 2	OUT 1	OUT 2	MOTOR
H	L	H	L	Normal
L	H	L	H	Reverse
H	H	OFF	OFF	Wait
L	L	OFF	OFF	Wait

LC7823/LC7823N(Analog switch)



Serial Data Composition

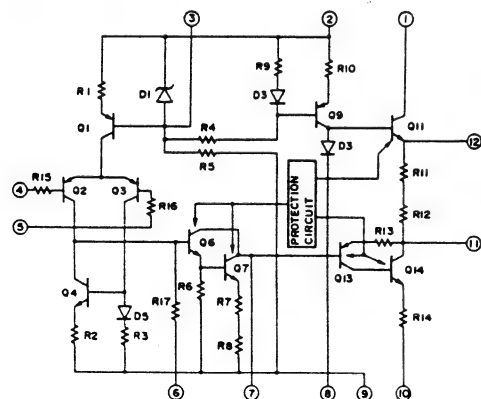
CIRCUIT NO	PART NAME	A0	A1	A2	A3	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
Q310	LC7823-N	0	1	1	1								
Q312	LC7821-N	1	1	0	1								
Q313	LC7823-N	1	1	1	1								
Q893	LC7822-N	0	0	1	1								
Q894	LC7822-N	1	0	1	1								

SWITCH CHANGEOVER

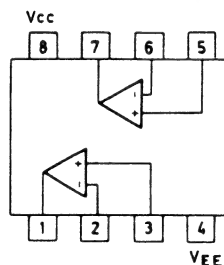
ADDRESS

Pin No.	Terminal	Description
1,30	CD	On when the input selector is CD.
2,29	PHONO	On when the input selector is PHONO.
3,28	LCOM1,RCOM1	Common terminal.
4,27	TAPE-1 REC	Off when the input selector is TAPE-1.
5,26	TAPE-1 PB	On when the input selector is TAPE-1.
6,25	LCOM2,RCOM2	Common terminal.
7,24	TAPE-2 REC	Off when the input selector is TAPE-2.
8,23	TAPE-2 PB	On when the input selector is TAPE-2.
9,22	LCOM3,RCOM3	Common terminal.
10,21	TUNER	On when the input selector is TUNER.
11,20	LCOM4,RCOM4	Common terminal.
12	VEE	Negative power supply terminal.(-15V)
13	CE	Chip enable terminal.Connect to the terminal FUNC of the microprocessor.
14	DI	Serial data input terminal.Connect to the terminal DATA of the microprocessor.
15	CL	Serial clock terminal.Connect to the terminal CL of the microprocessor.
16	Vss	Ground terminal.
17	S	Select terminal.
18	RES	Reset terminal.
19	VDD	Power supply terminal.(+5V)

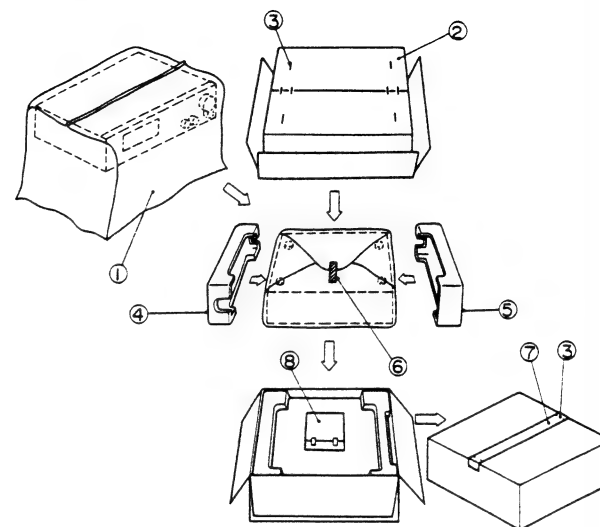
μPC1225H(Power amplifier driver)



NJM4558D-X(Operation amplifier)



PACKING VIEW

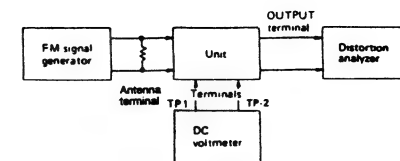


REF. NO.	PART NO.	Description
1	29052560AY	Master carton box <TX-9021>
	29052562AY	Master carton box <S> <TX-9021>
	29052564AY	Master carton box <TX-9011>
	29052566AY	Master carton box <S> <TX-9011>
2	29091440BY	Pad L
3	29091441BY	Pad R
4	29100034A	850×650,Styrene bag
5	282301	Staple
6	29110071	PP tape
7	261504	Adhesive tape
8	Accessory bag ass'y	
	29341796Y	Instruction manual
	292112	FM antenna
	232140	NMA-3057,AM loop antenna
	3010054	UM-3,Two batteries
	24140223Y	RC-223S,Remote control transmitter
	2010200	Cord RI
	29100097	350×250,Styrene bag
	29365020H	Warranty card
	29100094B	Styrene bag for warranty card

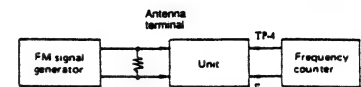
NOTE: :Black model only
<S>:Silver model only

FM section

Item	Step	Connection of instrument	FM SG output	Stereo modulator output	Tuned frequency	Output indicator	Adjustment point	Adjust for	Remarks
I F	1	Fig. 1	99.1MHz 1kHz, 75kHz devi. 65dB(60dB)	—	99.1MHz	DC voltmeter	L101	$0 \pm 20\text{mV}$	Set the FM mode switch to MONO. Repeat the steps 1 and 2 until no further adjustment is necessary.
	2					Distortion analyzer	L102	Minimum	
V C O		Fig. 2	99.1MHz 1kHz, 75kHz devi. 65dB(60dB)	—	99.1MHz	Frequency counter	R201	$19\text{kHz} \pm 10\text{Hz}$	Set the FM mode switch to AUTO.
Stereo distortion		Fig. 3	99.1MHz Ext. modulation 65dB(60dB)	L+R 1kHz 67.5kHz devi.	99.1MHz	Distortion analyzer	IF on front end	Minimum	
Tuned indicator level	1	Fig. 3	99.1MHz 1kHz, 75kHz devi. 17.2dB(12dB)	—	99.1MHz	TUNED indicator	R101	Light on	
	2		99.1MHz 1kHz, 75kHz devi. 16.2dB(11dB)					Light off	

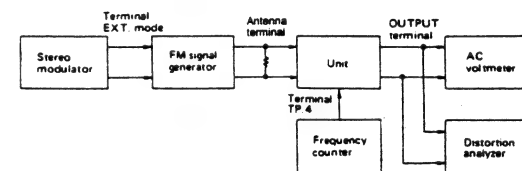


(Fig. 1)



Use the high impedance probe. (10:1)

(Fig. 2)



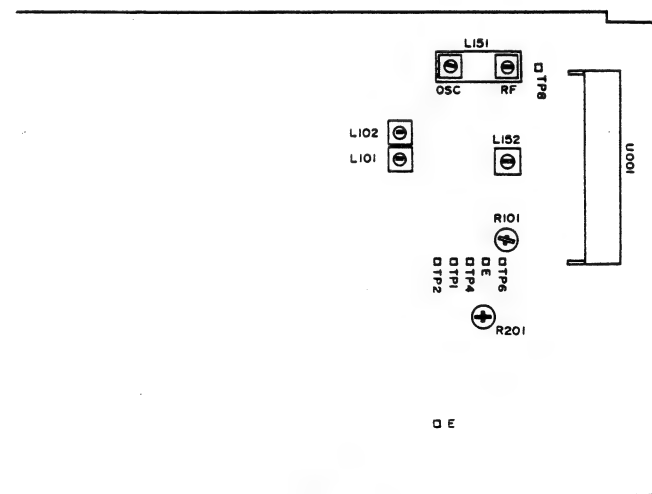
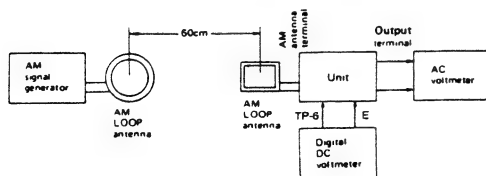
(Fig. 3)

AM section

Step	AM SG output	Tuned Frequency	Output indicator	Adjustment point	Adjust for
1	—	522kHz	Digital DC voltmeter	OSC coil on RF block (L151)	$1.5\text{V} \pm 0.1\text{V}$
2	603kHz, 60dB/m 400Hz 30% mod.	603kHz	A C voltmeter	RF coil on RF block (L151)	Maximum
3	990kHz, 60dB/m 400Hz 30% mod.	990kHz	A C voltmeter	L152	Maximum

Reference specifications

Tuned voltage	AM 522kHz	$1.5 \pm 0.4\text{V}$
(Connet Digital)	1611kHz	$7.5 \pm 0.5\text{V}$
DC voltmeter to FM	87.50MHz	$2.0 \pm 0.5\text{V}$
test point TP-6)	108.0MHz	$7.5 \pm 0.5\text{V}$

Muting width $35 \pm 10\text{kHz}$ Muting level FM $12 \pm 3\text{dB}$ Auto stop level AM Less than 68dB/m FM Less than $20\text{dB}\mu$ Stereo indicator level $14 \pm 4\text{dB}\mu$ 

Adjustment point.

ADJUSTMENT PROCEDURES

Preparation

1.Input

FM mono:1kHz,75kHz devi.,60dB/ μ V
FM stereo:1kHz,75kHz devi.,60dB/ μ V
Pilot signal 19kHz 7.5kHz devi.
AM:400Hz 30% mod.

2.Outputs

Connect the non-inductive type resistors of 8 ohms
to the speaker terminals A unless otherwise noted.

3.Standard Knob Position

VOLUME.....Maximum
BASS/TREBLE/BALANCE.....Center
MUTING/LOUDNESS.....Off
INPUT SELECTOR.....CD
SPEAKERS.....A

Confirming Operation

1.Protection circuit

a.Speaker relay

The speaker relay turns on after the power switch turned on for 5 minutes.
The speaker relay turns off immediately after the power switch turns off.

b. Over-voltage confirmation

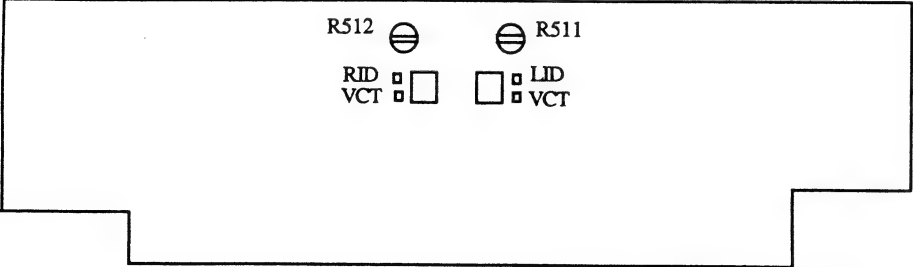
The speaker relay is off immediately after DC voltage $\pm 6V$ is applied to the terminal CD.

Amplifier section

Idling Current Adjustment

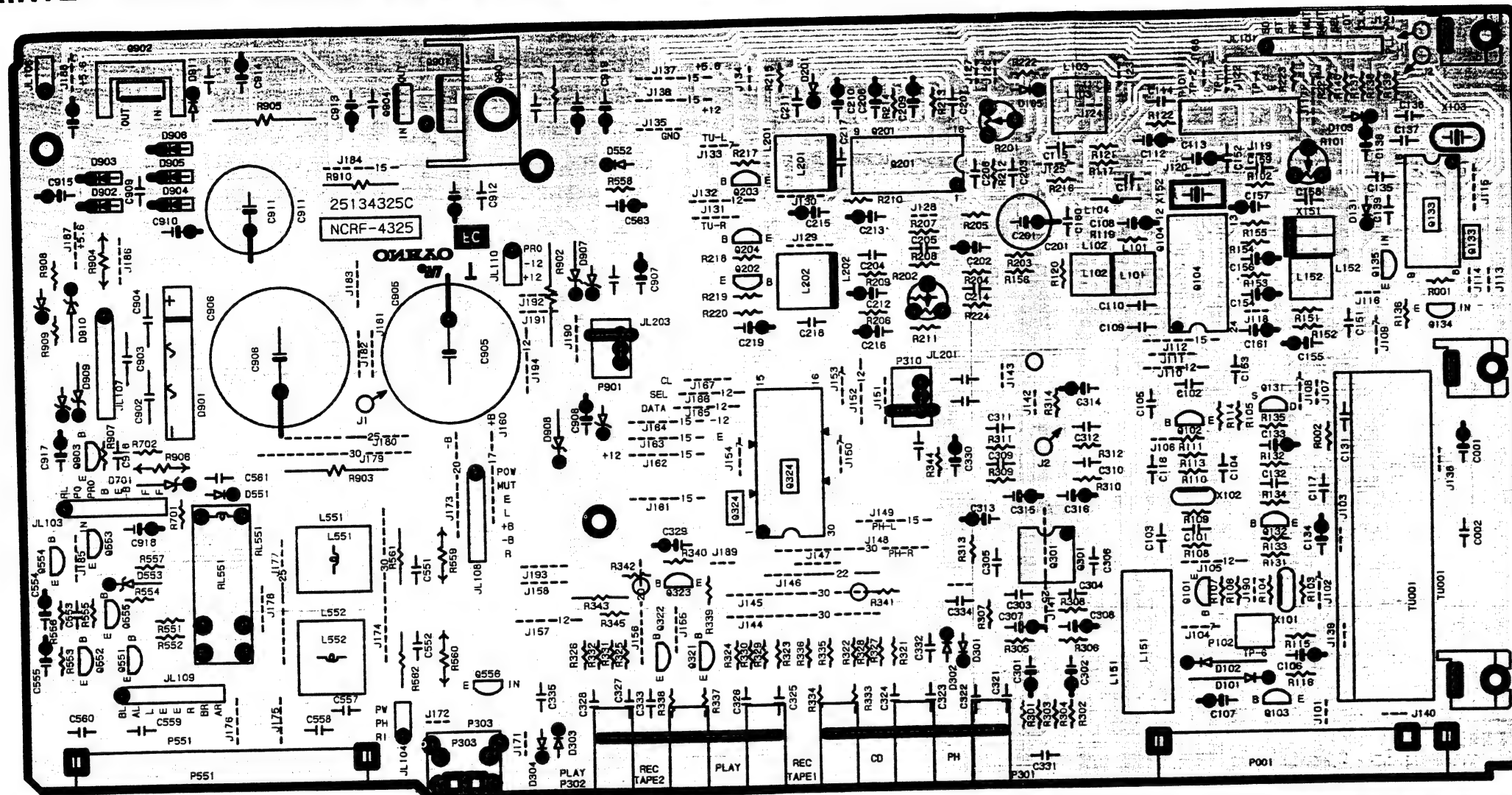
Connect the DC voltmeter to the terminals LID(RID) and CT on the power amplifier pc board.
Adjust the semi-fixed resistor R511(R512) so that the indication of voltmeter is $5 \pm 0.5mV$.

Note:():Right channel

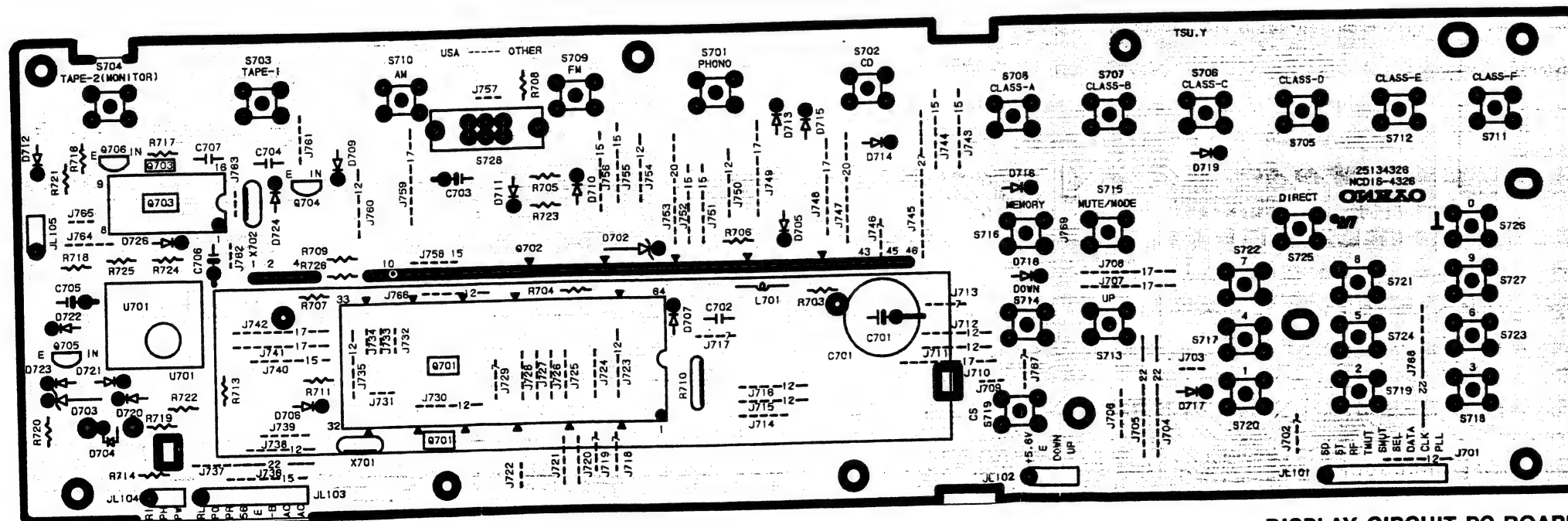


POWER AMPLIFIER PC BOARD
SOLDERING SIDE

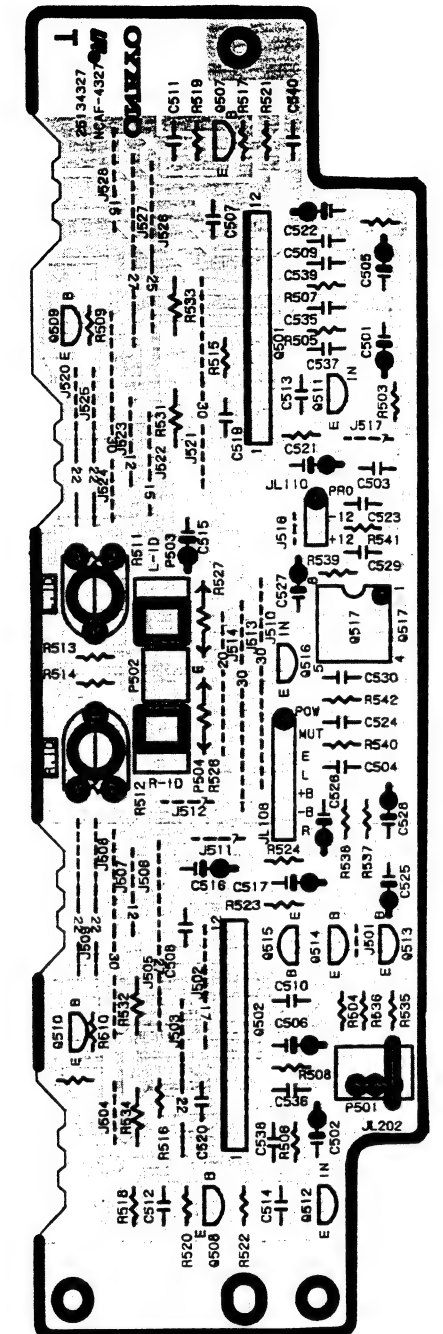
PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



TUNER CIRCUIT PC BOAS



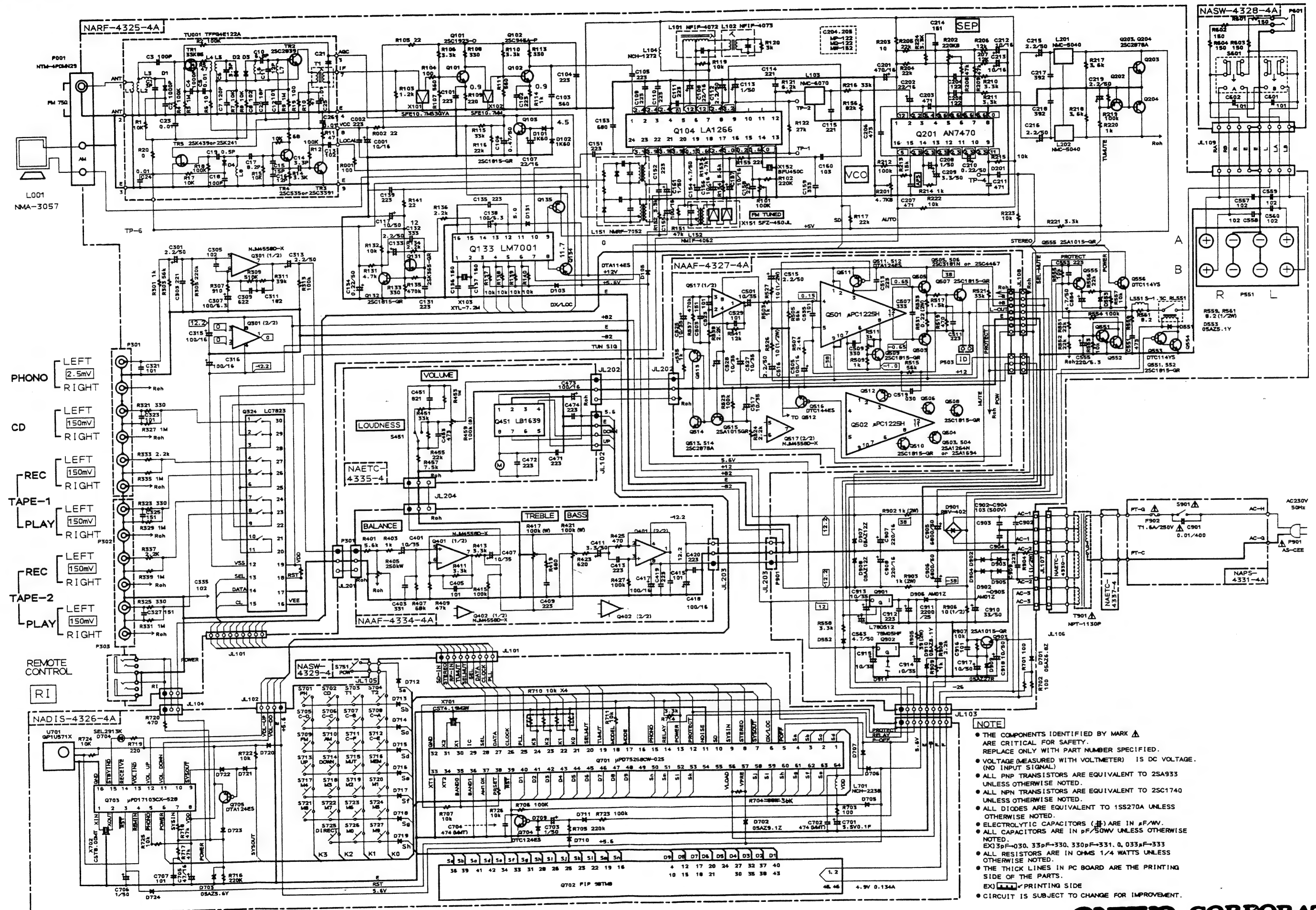
DISPLAY CIRCUIT PC BOARD



POWER AMPLIFIER
CIRCUIT PC BOARD

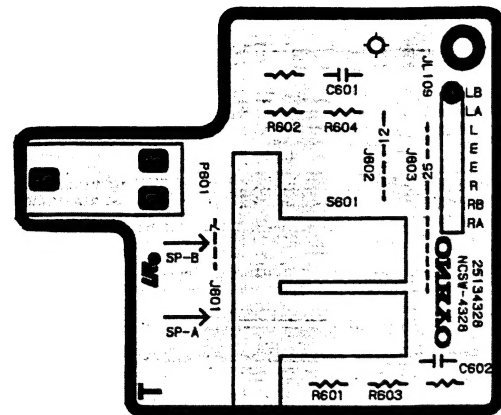
SCHEMATIC DIAGRAM

MODEL TX-9011

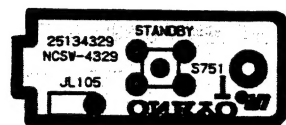


- NOTE**
- THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
 - VOLTAGE (MEASURED WITH VOLTMETER) IS DC VOLTAGE. (NO INPUT SIGNAL)
 - ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA933 UNLESS OTHERWISE NOTED.
 - ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1740 UNLESS OTHERWISE NOTED.
 - ALL DIODES ARE EQUIVALENT TO 1SS270A UNLESS OTHERWISE NOTED.
 - ELECTROLYTIC CAPACITORS (C) ARE IN μ F/VV.
 - ALL CAPACITORS ARE IN pF/50WV UNLESS OTHERWISE NOTED.
 - EX) 50pF-0.30, 33pF-330, 330pF-331, 0.033 μ F-333
 - ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.
 - THE THICK LINES IN PC BOARD ARE THE PRINTING SIDE OF THE PARTS.
 - EX) Δ PRINTING SIDE
 - CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

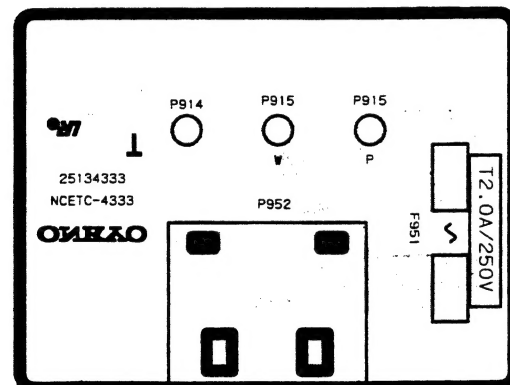
PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



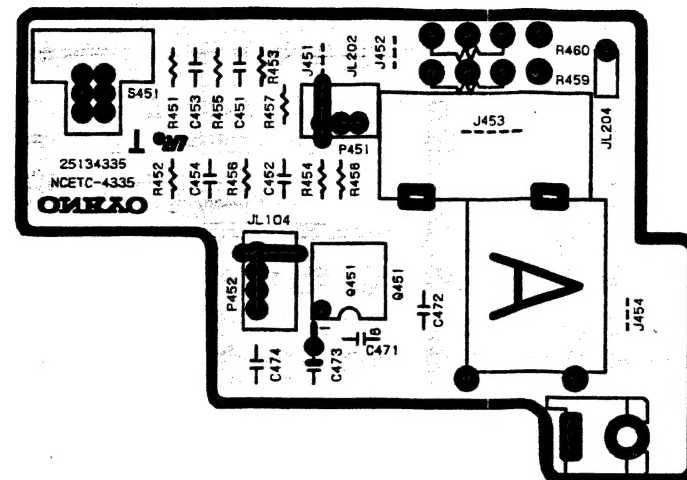
HEADPHONE TERMINAL PC BOARD



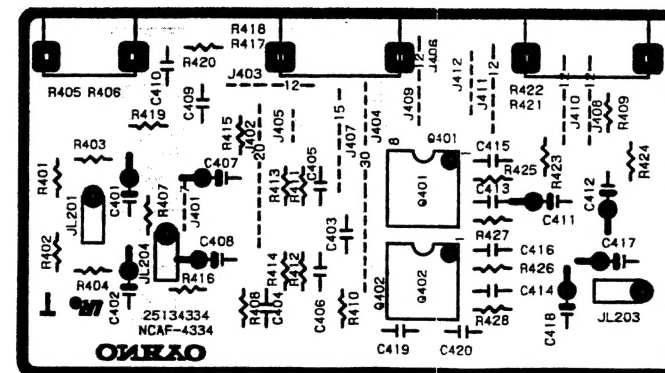
POWER SWITCH PC BOARD



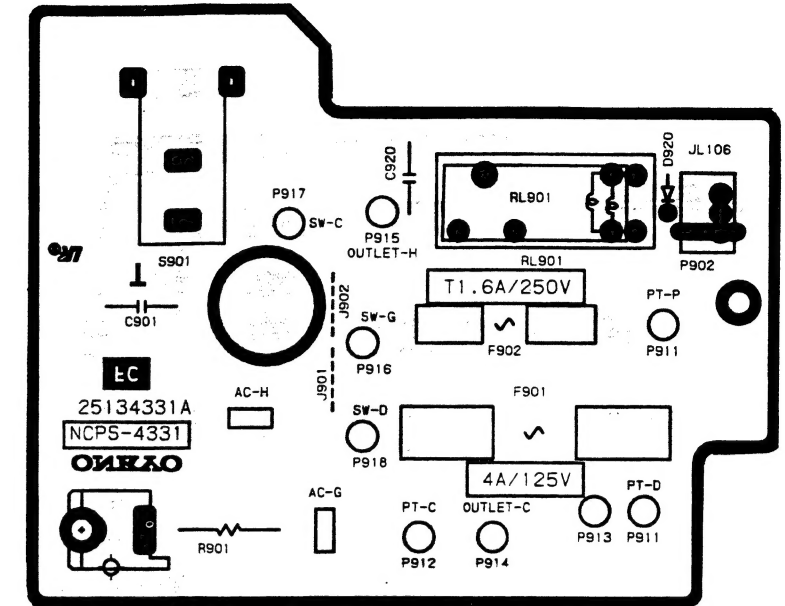
AC OUTLET PC BOARD



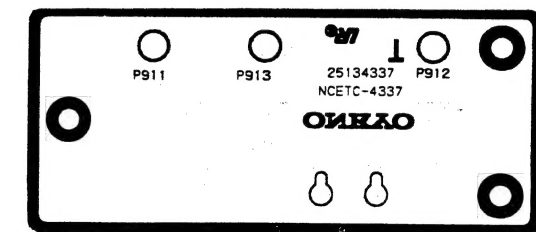
VOLUME CONTROL PC BOARD



TONE CONTROL CIRCUIT PC BOARD



POWER SUPPLY CIRCUIT PC BOARD



TERMINAL PC BOARD

PRINTED CIRCUIT BOARD-PARTS LIST

MODEL TX-9021

TUNER CIRCUIT PC BOARD (NARF-4325-3A)

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
Front end					
TU001	240085	TFFG4E122A	X101	3010081	SFE10.7MS3GYA
ICs					
Q104	22240039	LA1266	X102	3010137	SFE10.7MMK
Q133	22240090	LM7001	X151	3010123	SFZ450JL
Q201	22240242	AN7470	X152	3010076	BFU450C
Q301	222502	NJM4558D-X	Capacitors		
Q324	22240158 or	LC7823 or	C001	354761009	10 μ F,35V,Elect.
	22240339	LC7823N	C106	354784799	0.47 μ F,50V,Elect.
Q901	222780126	L780512	C107,C108	354742209	22 μ F,16V,Elect.
Q902	222780055	78M05HF	C112	354780229	2.2 μ F,50V,Elect.
Transistors					
Q101	2211723	2SC1923-O	C113,C161	354780109	1 μ F,50V,Elect.
Q102	2210746	2SC945A-P	C117	354781009	10 μ F,50V,Elect.
Q103,Q132	2211255	2SC1815-GR	C131	374722234	0.022 μ F \pm 5%,50V,Plastic
Q131	2212445	2SK365-GR	C132	374723334	0.033 μ F \pm 5%,50V,Plastic
Q134,Q135	2213510	DTA114ES	C133	354780229	2.2 μ F,50V,Elect.
Q202	2211455	2SA1015-GR	C134	354782299	0.22 μ F,50V,Elect.
Q203,Q204	2212285	2SC2878-A	C138	354721019	100 μ F,6.3V,Elect.
Q551,Q552	2211255	2SC1815-GR	C154	354780479	4.7 μ F,50V,Elect.
Q553,Q556	221281	DTC114YS	C155	354741019	100 μ F,16V,Elect.
Q554	2211255	2SC1815-GR	C156,C157	354761009	10 μ F,35V,Elect.
Q555,Q903	2211455	2SA1015-GR	C159	374723334	0.033 μ F \pm 5%,50V,Plastic
Diodes					
D101,D102	223132	1K60	C160	374721034	0.01 μ F \pm 5%,50V,Plastic
D103,D105	223205 or	1SS270A or	C201	354744719	470 μ F,16V,Elect.
D131,D201	223163	1SS133	C202	354742209	22 μ F,16V,Elect.
D551,D552	223205 or	1SS270A or	C204,C205	374721224	1200pF \pm 5%,50V,Plastic
D911	223163	1SS133	C206	374724734	0.047 μ F \pm 5%,50V,Plastic
D553,D910	224150512	05AZ5.1Y	C207	370134714	470pF \pm 5%,100V,Plastic
D701	224150683	05AZ6.8Z	C208	354780109	1 μ F,50V,Elect.
D901	22380038	RBV602	C209	354780339	3.3 μ F,50V,Elect.
D902-D906	22380035 or	GP104003 or	C210	354782299	0.22 μ F,50V,Elect.
	22380046	AM01Z	C212,C213	354761009	10 μ F,35V,Elect.
D907,D908	224151203	05AZ12Z	C215,C216	354780229	2.2 μ F,50V,Elect.
D909	224152704	05AZ27R	C217,C218	374723924	3900pF \pm 5%,50V,Plastic
Coils and Transformers					
L101	233401	NFIF-4072	C219	354780229	2.2 μ F,50V,Elect.
L102	233402	NFIF-4073	C301,C302	354780229	2.2 μ F,50V,Elect.
L103	233383	NMC-6070	C307,C308	354721019	100 μ F,6.3V,Elect.
L104	233409M022	NCH-1272	C309,C310	374726224	6200pF \pm 5%,50V,Plastic
L151	232152	NMRF-7052,RF block	C311,C312	374721824	1800pF \pm 5%,50V,Plastic
L152	232139	NMIF-4062	C313,C314	354780229	2.2 μ F,50V,Elect.
L201,L202	233294	NMC-5040	C315,C316	354741019	100 μ F,16V,Elect.
L551,L552	231176	S-13C	C551,C552	374724734	0.047 μ F \pm 5%,50V,Plastic
Resonator					
X103	3010158 or	XTL-7.2M or	C554,C563	354780479	4.7 μ F,50V,Elect.
	3010141	XTL-7.2M,Crystal	C555	354722219	220 μ F,6.3V,Elect.
			C905,C906	3504207	6800 μ F,50V,Elect.
			C907,C908	354742219	220 μ F,16V,Elect.
			C910	354783309	33 μ F,50V,Elect.
			C911	354752229	2200 μ F,25V,Elect.
			C913-C915	354761009	10 μ F,35V,Elect.
			C917,C918	354781009	10 μ F,50V,Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
Resistors			Capacitors		
R101	5210221 or 5210070	N06HR100KBD, Trim	C701	3000057 or 3000068	0.1F,5.5V or 0.047F,5.5V,Super
R201	5210216 or 5210062	N06HR5KBD or N06HR4.7KBD,Trim	C702,C704	375524744	0.47 μ F \pm 5%,50V,Plastic
R559,R560	452530824	8.2 ohm \pm 5%,1/2W,Metal	C703	353780229	2.2 μ F,50V,Elect.
R902,R903	441721024	1 kohm \pm 5%,2W,Metal	C705	353744709	47 μ F,16V,Elect.
R904	452530104	1 ohm \pm 5%,1/2W,Metal	C706	353780109	1 μ F,50V,Elect.
R905	441723904	39 ohm \pm 5%,2W,Metal	Resistor		
R906	441721004	10 ohm \pm 5%,1/2W,Metal	R710	49163103404	10 kohm \times 4,1/10W,Array
Terminals			Switches		
P001	25060117	NTM-2PDMLO51,Antenna	S701-S727	25035548	NPS-111-S510
P301,P302	25045323	NPJ-6PDBL180	S729	25035548	NPS-111-S510
P303	25045172	HSJ1003-01-020	Holders		
P551	25060158	NTM-8PDMLO84,Speaker		27190810	FL
Relay				27190811	LED
RL551	25065339	NRL-2P5A-DC24-046	POWER AMPLIFIER CIRCUIT PC BOARD (NAAF-4327-3A)		
Sockets			CIRCUIT NO.	PART NO.	DESCRIPTION
P310,P901	25050267	NSCT-3P95	ICs		
Radiators			Q501,Q502	22240108	μ PC1225H
R1	27160176	RAD56	Q517	222502	NJM4558D-X
R2	27160145	RAD51	Transistors		
R3	27160166		Q503,Q504	2201693, 2201694, 2201696, 2202282 or 2202283	* 2SA1491-O, * 2SA1491-Y, * 2SA1491-P, * 2SA1265N-R or * 2SA1265N-O
DISPLAY CIRCUIT PC BOARD (NADIS-4326-3A)			Q505,Q506	2201703, 2201704, 2201706, 2202292 or 2202293	* 2SC3855-O, * 2SC3855-Y, * 2SC3855-P, * 2SC3812N-R or * 2SC3812N-O
CIRCUIT NO.	PART NO.	DESCRIPTION	Q507-Q510	2211255	2SC1815-GR
Remote control sensor			Q511,Q512	2212600	DTA124ES
U701	24130007	GP1U571X	Q513,Q514	2212285	2SC2878-A
ICs			Q515	2211455	2SA1015-GR
Q701	22240406	μ PD75268CW-025	Q516	221282	DTC144ES
Q703	22240376	μ PD17103CX-528	Capacitors		
FL tube			C501,C502	354761009	10 μ F,35V,Elect.
Q702	212093	FIP9BTM8	C505,C506	354741019	100 μ F,16V,Elect.
Transistors			C507,C508	374723334	0.033 μ F \pm 5%,50V,Plastic
Q704	221282	DTC144ES	C515,C516	354780229	2.2 μ F,50V,Elect.
Q705	2212600	DTA124ES	C517	354761009	10 μ F,35V,Elect.
Diodes			C525-C528	354761009	10 μ F,35V,Elect.
D702	224150913	05A29.1Z	Resistors		
D703	224150562	05AZ5.6Y	R511,R512	5215061	N08HR3KBC,Trim
D704	225142	SEL2913K,LED	R526,R527	442521004	10 ohm,1/2W,Metal oxide film
D705-D707	223163 or	1SS133 or	R531-R534	4500005	BPR2FK-0.22,Metal plate
D709-D724	223205	1SS270A	Plugs		
Resonators			P503,P504	25055495	NPLG-2P470
X701	3010163	CST4.19MGW,Ceramic			
X702	3010154 or 3010190	CST8.00MT or CST8.00HSW,Ceramic			
Coil					
L701	233400M220 or 233409K220	NCH-2238 or NCH-1284			

PRINTED CIRCUIT BOARD-PARTS LISTMODEL TX-9011

HEADPHONE TERMINAL PC BOARD (NASW-4328-3A)

CIRCUIT NO.	PART NO.	DESCRIPTION
S601	25035517	NPS-222-L479,Push switch
P601	25045255	YKB21-5009,Headphone terminal

POWER SWITCH PC BOARD (NASW-4329-3)

CIRCUIT NO.	PART NO.	DESCRIPTION
S751	25035548	NPS-111-S510,Power switch

POWER SUPPLY CIRCUIT PC BOARD (NAPS-4331-3A)

CIRCUIT NO.	PART NO.	DESCRIPTION
D920	223163 or 223205	1SS133 or 1SS270A,Diode
C901,C920	3500065A	△ DE7150FZ103PAC400V/125V, Capacitor 1S
C901A	27301216	△ Cover for C901
S901	25035550	△ NPS-111-L512P,Power switch
F902	252075	△ 2.5A-SE-EAK,Primary fuse
F902a	25050065	△ YSH403T,Fuseholders
RL901	25065248	△ NRL-IP15ADC12-29,Relay
P902	25050267	NSCT-3P95,Socket

AC OUTLET TERMINAL PC BOARD (NAETC-4333-3A)

CIRCUIT NO.	PART NO.	DESCRIPTION
P952	25050410	△ NSCT-2P235,AC outlet
F951	252047	△ 2A-SE-EAK,Fuse
F951a	25050065	△ YSH-403T,Fuseholders

TONE CONTROL CIRCUIT PC BOARD (NAAF-4334-3A)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q401,Q402	222502	NJM4558D-X IC
		Capacitors
C401,C402	354761009	10 μ F,35V,Elect.
C407,C408	354761009	10 μ F,35V,Elect.
C409,C410	374722234	0.022 μ F \pm 5%,50V,Plastic
C411,C412	354780339	3.3 μ F,50V,Elect.
C413,C414	374722234	0.022 μ F \pm 5%,50V,Plastic
C417,C418	354741019	100 μ F,16V,Elect.
		Resistors
R405,R406	5104225	N11RGLC250KWT22Z, Balance,variable
R417,R418	5104230	N14RLC100KWT22Z,Treble,variable
R421,R422	5104230	N14RLC100KWT22Z,Bass,variable

VOLUME CONTROL CIRCUIT PC BOARD (NAETC-4335-3)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q451	22240322	LB1639,IC
C453,C454	374724734	0.047 μ F \pm 5%,50V,Plastic capacitor
C473	354741019	100 μ F,16V,Elect. capacitor
R459,R460	5104243	N16RGM100KBTP25F,Volume, variable resistor
S451	25035609	NPS-122-L571,Loudness switch
P451	25050267	NSCT-3P95,Socket
P452	25050268	NSCT-4P96,Socket

TUNER CIRCUIT PC BOARD (NARF-4325-4A)

CIRCUIT NO.	PART NO.	DESCRIPTION
		Front end
TU001	240085	TFFG4E122A
		ICs
Q104	22240039	LA1266
Q133	22240090	LM7001
Q201	22240242	AN7470
Q301	222502	NJM4558D-X
Q324	22240158 or 22240339	LC7823 or LC7823N
Q901	222780126	L78OS12
Q902	222780055	78M05HF
		Transistors
Q101	2211723	2SC1923-O
Q102	2210746	2SC945A-P
Q103,Q132	2211255	2SC1815-GR
Q131	2212445	2SK365-GR
Q134,Q135	2213510	DTA114ES
Q202	2211455	2SA1015-GR
Q203,Q204	2212285	2SC2878-A
Q551,Q552	2211255	2SC1815-GR
Q553,Q556	221281	DTC114YS
Q554	2211255	2SC1815-GR
Q555,Q903	2211455	2SA1015-GR
		Diodes
D101,D102	223132	1K60
D103,D105	223205 or 223163	1SS270A or 1SS133
D131,D201	223163	1SS133
D551,D552	223205 or 223163	1SS270A or 1SS133
D911	223163	1SS133
D553,D910	224150512	05AZ5.1Y
D701	224150683	05AZ6.8Z
D901	22380022	RBV402
D902-D906	22380035 or 22380046	GP104003 or AM01Z
D907,D908	224151203	05AZ12Z
D909	224152704	05AZ27R
		Coils and Transformers
L101	233401	NFIF-4072
L102	233402	NFIF-4073
L103	233383	NMC-6070
L104	233409M022	NCH-1272
L151	232152	NMRF-7052,RF block
L152	232139	NMIF-4062
L201,L202	233294	NMC-5040
L551,L552	231176	S-1.3C
		Resonator
X103	3010158 or 3010141	XTL-7.2M or XTL-7.2M,Crystal

CIRCUIT NO.	PART NO.	DESCRIPTION
		Ceramic filters
X101	3010081	SFE10.7MS3GYA
X102	3010137	SFE10.7MMK
X151	3010123	SFZ450JL
X152	3010076	BFU450C
		Capacitors
C001	354761009	10 μ F,35V,Elect.
C106	354784799	0.47 μ F,50V,Elect.
C107,C108	354742209	22 μ F,16V,Elect.
C112	354780229	2.2 μ F,50V,Elect.
C113,C161	354780109	1 μ F,50V,Elect.
C117	354781009	10 μ F,50V,Elect.
C131	374722234	0.022 μ F \pm 5%,50V,Plastic
C132	374723334	0.033 μ F \pm 5%,50V,Plastic
C133	354780229	2.2 μ F,50V,Elect.
C134	354782299	0.22 μ F,50V,Elect.
C138	354721019	100 μ F,6.3V,Elect.
C154	354780479	4.7 μ F,50V,Elect.
C155	354741019	100 μ F,16V,Elect.
C156,C157	354761009	10 μ F,35V,Elect.
C159	374723334	0.033 μ F \pm 5%,50V,Plastic
C160	374721034	0.01 μ F \pm 5%,50V,Plastic
C201	354744719	470 μ F,16V,Elect.
C202	354742209	22 μ F,16V,Elect.
C204,C205	374721224	1200pF \pm 5%,50V,Plastic
C206	374724734	0.047 μ F \pm 5%,50V,Plastic
C207	370134714	470pF \pm 5%,100V,Plastic
C208	354780109	1 μ F,50V,Elect.
C209	354780339	3.3 μ F,50V,Elect.
C210	354782299	0.22 μ F,50V,Elect.
C212,C213	354761009	10 μ F,35V,Elect.
C215,C216	354780229	2.2 μ F,50V,Elect.
C217,C218	374723924	3900pF \pm 5%,50V,Plastic
C219	354780229	2.2 μ F,50V,Elect.
C301,C302	354780229	2.2 μ F,50V,Elect.
C307,C308	354721019	100 μ F,6.3V,Elect.
C309,C310	374726224	6200pF \pm 5%,50V,Plastic
C311,C312	374721824	1800pF \pm 5%,50V,Plastic
C313,C314	354780229	2.2 μ F,50V,Elect.
C315,C316	354741019	100 μ F,16V,Elect.
C551,C552	374724734	0.047 μ F \pm 5%,50V,Plastic
C554,C563	354780479	4.7 μ F,50V,Elect.
C555	354722219	220 μ F,6.3V,Elect.
C905,C906	3504207	6800 μ F,50V,Elect.
C907,C908	354742219	220 μ F,16V,Elect.
C910	354783309	33 μ F,50V,Elect.
C911	354752229	2200 μ F,25V,Elect.
C913-C915	354761009	10 μ F,35V,Elect.
C917,C918	354781009	10 μ F,50V,Elect.

CAUTION: Replacement for transistor of mark * if necessary,
must be made from the same beta group (H FE) as
the original type.

NOTE: THE COMPONENTS IDENTIFIED BY MARK △
ARE CRITICAL FOR RISK OF FIRE AND
ELECTRIC SHOCK. REPLACE ONLY WITH
PART NUMBER SPECIFIED.

CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistors	
R101	5210221 or 5210070	N06HR100KBD, Trim
R201	5210216 or 5210062	N06HR5KBD or N06HR4.7KBD,Trim
R559,R560	452530824	8.2 ohm $\pm 5\%$, 1/2W, Metal
R902,R903	441729114	910 ohm $\pm 5\%$, 2W, Metal
R904	452530104	1 ohm $\pm 5\%$, 1/2W, Metal
R905	441723904	39 ohm $\pm 5\%$, 2W, Metal
R906	442531004	10 ohm $\pm 5\%$, 1/2W, Metal
	Terminals	
P001	25060117	NTM-2PDML051, Antenna
P301,P302	25045323	NPJ-6PDBL180
P303	25045172	HSJ1003-01-020
P551	25060158	NTM-8PDML084, Speaker
	Relay	
RL551	25065339	NRL-2P5A-DC24-046
	Sockets	
P310,P901	25050267	NSCT-3P95
	Radiators	
R1	27160176	RAD56
R2	27160145	RAD51
R3	27160166	

DISPLAY CIRCUIT PC BOARD (NADIS-4326-4A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Remote control sensor	
U701	24130007	GP1U571X
	ICs	
Q701	22240406	μ PD75268CW-025
Q703	22240376	μ PD17103CX-528
	FL tube	
Q702	212093	FIP9BTM8
	Transistors	
Q704	221282	DTC144ES
Q705	2212600	DTA124ES
	Diodes	
D702	224150913	05AZ9.1Z
D703	224150562	05AZ5.6Y
D704	225142	SEL2913K,LED
D705-D707	223163 or	1SS133 or
D709-D724	223205	1SS270A
	Resonators	
X701	3010163	CST4.19MGW,Ceramic
X702	3010154 or 3010190	CST8.00MT or CST8.00HSW,Ceramic
	Coil	
L701	233400M220 or 233409K220	NCH-2238 or NCH-1284

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C701	3000057 or 3000068	0.1F,5.5V or 0.047F,5.5V,Super
C702,C704	375524744	0.47 μ F $\pm 5\%$, 50V, Plastic
C703	353780229	2.2 μ F, 50V, Elect.
C705	353744709	47 μ F, 16V, Elect.
C706	353780109	1 μ F, 50V, Elect.
	Resistor	
R710	49163103404	10 kohm $\times 4$, 1/10W, Array
	Switches	
S701-S727	25035548	NPS-111-S510
	Holders	
	27190810	FL
	27190811	LED

POWER AMPLIFIER CIRCUIT PC BOARD (NAAF-4327-4A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q501,Q502	22240108	μ PC1225H
Q517	222502	NJM4558D-X
	Transistors	
Q503,Q504	2202243,	* 2SA1694-O,
	2202244,	* 2SA1694-Y,
	2202246,	* 2SA1694-P,
	2202492 or	* 2SA1264N-R or
	2202493	* 2SA1264N-O
Q505,Q506	2202253,	* 2SC4467-O,
	2202254,	* 2SC4467-Y,
	2202256,	* 2SC4467-P,
	2202502 or	* 2SC3181N-R or
	2202503	* 2SC3181N-O
Q507-Q510	2211255	2SC1815-GR
Q511,Q512	2212600	DTA124ES
Q513,Q514	2212285	2SC2878-A
Q515	2211455	2SA1015-GR
Q516	221282	DTC144ES
	Capacitors	
C501,C502	354761009	10 μ F, 35V, Elect.
C505,C506	354741019	100 μ F, 16V, Elect.
C507,C508	374723334	0.033 μ F $\pm 5\%$, 50V, Plastic
C515,C516	354780229	2.2 μ F, 50V, Elect.
C517	354761009	10 μ F, 35V, Elect.
C525-C528	354761009	10 μ F, 35V, Elect.
	Resistors	
R511,R512	5215061	N08HR3KBC,Trim
R526,R527	442521004	10 ohm, 1/2W, Metal oxide film
R531-R534	4500005	BPR2FK-0.22, Metal plate
	Plugs	
P503,P504	25055495	NPLG-2P470

CAUTION: Replacement for transistor of mark *, if necessary, must be made from the same beta group (HFE) as the original type.

HEADPHONE TERMINAL PC BOARD (NASW-4328-4A)

CIRCUIT NO.	PART NO.	DESCRIPTION
S601	25035517	NPS-222-L479, Push switch
P601	25045255	YKB21-5009, Headphone terminal

POWER SWITCH PC BOARD (NASW-4329-4)

CIRCUIT NO.	PART NO.	DESCRIPTION
S751	25035548	NPS-111-S510, Power switch

POWER SUPPLY CIRCUIT PC BOARD (NAPS-4331-4A)

CIRCUIT NO.	PART NO.	DESCRIPTION
C901	3500065A	DE7150FZ103PAC400V/125V, Capacitor IS
C901A	27301216	Cover for C901
S901	25035550	NPS-111-L512P, Power switch
F902	252073	1.6A-SE-EAK, Primary fuse
F902a	25050065	YSH403T, Fuseholders

TONE CONTROL CIRCUIT PC BOARD (NAAF-4334-4A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q401,Q402	222502	NJM4558D-X
	Capacitors	
C401,C402	354761009	10 μ F, 35V, Elect.
C407,C408	354761009	10 μ F, 35V, Elect.
C409,C410	374722234	0.022 μ F $\pm 5\%$, 50V, Plastic
C411,C412	354780339	3.3 μ F, 50V, Elect.
C413,C414	374722234	0.022 μ F $\pm 5\%$, 50V, Plastic
C417,C418	354741019	100 μ F, 16V, Elect.
	Resistors	
R405,R406	5104225	N11RGLC250KWT22Z, Balance, variable
R417,R418	5104230	N14RLC100KWT22Z, Treble, variable
R421,R422	5104230	N14RLC100KWT22Z, Bass, variable

VOLUME CONTROL CIRCUIT PC BOARD (NAETC-4335-4)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q451	22240322	LB1639, IC
C453,C454	374724734	0.047 μ F $\pm 5\%$, 50V, Plastic capacitor
C473	354741019	100 μ F, 16V, Elect. capacitor
R459,R460	5104243	N16RGM100KBTP25F, Volume, variable resistor
S451	25035609	NPS-122-L571, Loudness switch
P451	25050267	NSCT-3P95, Socket
P452	25050268	NSCT-4P96, Socket

NOTE: THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

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